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10/750,471	12/30/2003	Chiang Yeh	134142	9828

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ALCATEL LUCENT	MONIKANG, GEORGE C
(FKA ALCATEL INTERNETWORKING, INC.)	
INTELLECTUAL PROPERTY & STANDARDS	
3400 W. PLANO PARKWAY, MS LEGL2	
PLANO, TX 75075	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/750,471	YEH, CHIANG
	Examiner	Art Unit
	GEORGE C. MONIKANG	2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>28 July 2008</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-35</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-35</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/1/2004</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1,

148 USPQ 459 (1966), that are applied for establishing a background for

determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 11-16, 24-27 & 32-35 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Nakazawa, US Patent 5,715,317, in view of applicant's

admitted prior art (figs. 1-6; paras 0002-0017; hereinafter referred to as AAPA),

and further in view Brungart, US Patent 6,223,090 B1.

Re Claim 1, Nakazawa discloses a method of processing sound data

determining, in a sound conditioning filter database having filters characterized

by a stored set of coefficients wherein each stored set of filter coefficients is a

function of at least one element of the audio source spatial data set (*fig. 1: 12;

col. 6, lines 40-54*), two or more stored sets of coefficients proximate to the at

least one element of the audio source spatial data set (*col. 7, line 66 through vol.*

8, line 2); interpolating between the determined two or more stored sets of coefficients (*fig. 1: 12; col. 6, lines 40-54*); convolving the sound data with a shaping filter having the interpolated filter coefficients (*fig. 1: 13; col. 6, lines 40-54*); and transmitting the resulting signal to a sound-producing array (*fig. 8: S812*); but fails to disclose receiving sound data at one or more microphones, comprising the steps of: receiving a transmission having sound data and an audio source spatial data set relative to the one or more microphones (*AAPA, fig. 1: 108*); from a speaker subject to be transmitted to a listener subject (*AAPA, para 0008*) and using the sound-producing array to determine at least one of the head orientation and torso orientation of the listener subject (*AAPA, paras 0007 & 0008*). However, AAPA does. The combined teachings of Nakazawa and AAPA fail to disclose a first position; using the sound-producing array to determine at least one of the head orientation and torso orientation of the listener subject in a second position, with the listener subject being rotated in the second relative to the listener subject in the first position (*Brungart, col. 1, lines 14-29; HRTF is calculated on the bases of the diffraction of sound energy by the head/torso and also by the orientation of the head/torso toward the sound source; therefore the HRTF is affected by how the manikin is oriented with respect to the sound source*).

　　　　Taking the combined teachings of Nakazawa, AAPA and Brungart as a whole, one skilled in the art would have found it obvious to modify the method of processing sound data determining, in a sound conditioning filter database having filters characterized by a stored set of coefficients wherein each stored

set of filter coefficients is a function of at least one element of the audio source

spatial data set (*fig. 1: 12; col. 6, lines 40-54*), two or more stored sets of

coefficients proximate to the at least one element of the audio source spatial data

set (*col. 7, line 66 through vol. 8, line 2*); interpolating between the determined

two or more stored sets of coefficients (*fig. 1: 12; col. 6, lines 40-54*); convolving

the sound data with a shaping filter having the interpolated filter coefficients (*fig.*

1: 13; col. 6, lines 40-54); and transmitting the resulting signal to a sound-

producing array (*fig. 8: S812*) of Nakazawa with receiving sound data at one or

more microphones, comprising the steps of: receiving a transmission having

sound data and an audio source spatial data set relative to the one or more

microphones (*AAPA, fig. 1: 108*); from a speaker subject to be transmitted to a

listener subject (*AAPA, para 0008*); and using the sound-producing array to

determine at least one of the head orientation and torso orientation of the listener

subject (*AAPA, paras 0007 & 0008*) as taught in AAPA so the system is able to

pickup sound for processing with a first position; using the sound-producing array

to determine at least one of the head orientation and torso orientation of the

listener subject in a second position, with the listener subject being rotated in the

second relative to the listener subject in the first position (*Brungart, col. 1, lines*

14-29: HRTF is calculated on the bases of the diffraction of sound energy by the

head/torso and also by the orientation of the head/torso toward the sound

source; therefore the HRTF is affected by how the manikin is oriented with

respect to the sound source) as taught in Brungart for the purpose of performing

accurate near-field Head-Related Transfer Function measurements.

Re Claim 2, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones (_Nakazawa, abstract_).

Re Claim 11, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1 further comprising the steps of: encapsulating the sound data and an audio source spatial data set relative to the one or more microphones into packets (_AAPA, para 0004_); transmitting via a network the packets; and receiving and de-encapsulating from the packets the sound data and the audio source spatial data set (_AAPA, para 0004_).

Re Claim 12, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1 further comprising the steps of: encoding the sound data and an audio source spatial data set relative to the one or more microphones into telephone signals (_AAPA, para 0004_); transmitting via a circuit switched network (_AAPA, para 0004_); receiving and de-encoding from the telephone signals the sound data and the audio source spatial data set (_AAPA, para 0004_).

Re Claim 13, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1 wherein the sound-producing array is comprised of headphones (_AAPA, para 0008_).

Re Claim 14, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1 wherein the sound-producing array is comprised of a plurality of audio speakers (*AAPA, para 0004*).

Re Claim 15, Nakazawa discloses a method of spatial filter tuning determining, in a sound conditioning filter database having filters characterized by a stored set of coefficients wherein each stored set of filter coefficients is a function of at least one element of the audio source spatial data set (*fig. 1: 12; col. 6, lines 40-54*), two or more stored sets of coefficients proximate to the at least one element of the audio source spatial data set (*col. 7, line 66 through vol. 8, line 2*); interpolating between the determined two or more stored sets of coefficients (*fig. 1: 12; col. 6, lines 40-54*), convolving the sound data with a shaping filter having the interpolated filter coefficients (*fig. 1: 13; col. 6, lines 40-54*); and transmitting the resulting signal to the sound-producing array (*fig. 8: S812*); but fails to disclose sound data transmitted from a speaker subject to be transmitted to a listener subject (*AAPA, para 0008*), comprising transmitting sound waves toward a listener subject having a torso and a head via a sound-producing array (*AAPA, para 0008*); receiving the reflected sound waves via one or more microphones (*AAPA, fig. 1: 108*). However, AAPA does. The combined teachings of Nakazawa and AAPA fail to disclose processing the received sound waves to determine time-relative rotation changes in listener subject head orientation and listener subject torso orientation (*Brungart, col. 1, lines 14-29: HRTF is calculated on the bases of the diffraction of sound energy by the head/torso and also by the orientation of the head/torso toward the sound*

source; therefore the HRTF is affected by how the manikin is oriented with

respect to the sound source); translating the determined time-relative changes in

listener subject orientation into changes in an audio source spatial data set

(*Brungart, col. 1, lines 14-29: HRTF is calculated on the bases of the diffraction*

of sound energy by the head/torso and also by the orientation of the head/torso

toward the sound source; therefore the HRTF is affected by how the manikin is

oriented with respect to the sound source). However, Brungart does.

Taking the combined teachings of Nakazawa, AAPA and Brungart as a

whole, one skilled in the art would have found it obvious to modify the method of

spatial filter tuning determining, in a sound conditioning filter database having

filters characterized by a stored set of coefficients wherein each stored set of

filter coefficients is a function of at least one element of the audio source spatial

data set (*fig. 1: 12; col. 6, lines 40-54*), two or more stored sets of coefficients

proximate to the at least one element of the audio source spatial data set (*col. 7,*

line 66 through vol. 8, line 2); interpolating between the determined two or more

stored sets of coefficients (*fig. 1: 12; col. 6, lines 40-54*), convolving the sound

data with a shaping filter having the interpolated filter coefficients (*fig. 1: 13; col.*

6, lines 40-54); and transmitting the resulting signal to the sound-producing array

(*fig. 8: S812*) of Nakazawa with sound data transmitted from a speaker subject to

be transmitted to a listener subject (*AAPA, para 0008*), comprising transmitting

sound waves toward a listener subject having a torso and a head via a sound-

producing array (*AAPA, para 0008*); receiving the reflected sound waves via one

or more microphones (*AAPA, fig. 1: 108*) as taught in AAPA so the system is

able to pickup sound interacting with the head, torso etc for processing with

processing the received sound waves to determine time-relative changes in

listener subject head orientation and listener subject torso orientation (*Brungart,*

col. 1, lines 14-29: HRTF is calculated on the bases of the diffraction of sound

energy by the head/torso and also by the orientation of the head/torso toward the

sound source; therefore the HRTF is affected by how the manikin is oriented with

respect to the sound source); translating the determined time-relative rotation

changes in listener subject orientation into changes in an audio source spatial

data set (*Brungart, col. 1, lines 14-29: HRTF is calculated on the bases of the*

diffraction of sound energy by the head/torso and also by the orientation of the

head/torso toward the sound source; therefore the HRTF is affected by how the

manikin is oriented with respect to the sound source) as taught in Brungart for

the purpose of performing accurate near-field Head-Related Transfer Function

measurements.

   Claims 16 & 27 have been analyzed and rejected according to claim 2.

   Claims 24 & 34 have been analyzed and rejected according to claim 13.

   Claim 25 & 35 have been analyzed and rejected according to claim 14.

   Claim 26 has been analyzed and rejected according to claim 1.

   Claim 32 has been analyzed and rejected according to claim 11.

   Claim 33 has been analyzed and rejected according to claim 12.

Claims 3-10, 17-23 & 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazawa, US Patent 5,715,317, applicant's admitted prior art (figs. 1-6; paras 0002-0017; hereinafter referred to as AAPA) and Brungart, US Patent 6,223,090 B1 as applied to claim 1 above, and further in view of Nakazawa's admitted prior art (figs. 13-15, col. 1, line 7 through col. 3, line 45; hereinafter referred to as NAAPA).

Re Claim 3, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1; but fail to disclose wherein the spatial data set comprises a first audio source angle of incidence relative to the one or more microphones. However, NAAPA does (*NAAPA, col. 2, lines 39-44*).

Taking the combined teachings of Nakazawa, AAPA, Brungart and NAAPA as a whole, one skilled in the art would have found it obvious to modify the method of Nakazawa, AAPA and Brungart with wherein the spatial data set comprises a first audio source angle of incidence relative to the one or more microphones as taught in NAAPA (*NAAPA, col. 2, lines 39-44*) so that the system is able to pickup multiple sounds from different directions for processing.

Re Claim 4, the combined teachings of Nakazawa, AAPA, Brungart and NAAPA disclose the method of claim 3 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones (*Nakazawa, abstract*).

Re Claim 5, the combined teachings of Nakazawa, AAPA, Brungart and NAAPA disclose the method of claim 3 wherein the spatial data set further

comprises a second audio source angle of incidence relative to the one or more microphones, the second audio source angle of incidence being substantially orthogonal to the first audio source angle of incidence (*NAAPA, col., lines 39-44: the specified angle can be set to 90 degrees or arbitrary angle could cross paths with each other in any form including orthogonally*).

Re Claim 6, the combined teachings of Nakazawa, AAPA, Brungart and NAAPA disclose the method of claim 5 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones (*Nakazawa, abstract*).

Re Claim 7, the combined teachings of Nakazawa, AAPA and Brungart disclose the method of claim 1; but fails to disclose further comprising the step of determining a first audio source angle of incidence relative to the one or more microphones for inclusion in the spatial data set. However, NAAPA does (*NAAPA, col. 2, lines 39-44*).

Taking the combined teachings of Nakazawa, AAPA, Brungart and NAAPA as a whole, one skilled in the art would have found it obvious to modify the method of Nakazawa, AAPA and Brungart with further comprising the step of determining a first audio source angle of incidence relative to the one or more microphones for inclusion in the spatial data set as taught in NAAPA (*NAAPA, col. 2, lines 39-44*) so that the system is able to pickup multiple sounds from different directions for processing.

Re Claim 8, the combined teachings of Nakazawa, AAPA, Brungart and
NAAPA disclose the method of claim 7 further comprising the steps of:
determining, for a voice-over-Internet Protocol session (*AAPA, fig. 1: 110 & 114;
para 0004*), a nominal audio source distance set point relative to the one or more
microphones (*AAPA, fig. 14: 130 & 134; para 0005*); and determining an audio
source distance setting relative to the determined nominal distance set point for
inclusion in the spatial data set (*AAPA, fig. 14: 132; para 0005*).

Re Claim 9, the combined teachings of Nakazawa, AAPA, Brungart and
NAAPA disclose the method of claim 7 further comprising the step of determining
a second audio source angle of incidence relative to the one or more
microphones, the second audio source angle of incidence being substantially
orthogonal to the first audio source angle of incidence for inclusion in the spatial
data set (*NAAPA, col., lines 39-44: the specified angle can be set to 90 degrees
or arbitrary angle could cross paths with each other in any form including
orthogonally*).

Re Claim 10, the combined teachings of Nakazawa, AAPA, Brungart and
NAAPA disclose the method of claim 9 further comprising the steps of:
determining, for a voice-over-Internet Protocol session (*AAPA, fig. 1: 110 & 114;
para 0004*), a nominal audio source distance set point relative to the one or more
microphones (*AAPA, fig. 14: 130 & 134; para 0005*); and determining an audio
source distance setting relative to the determined nominal distance set point for
inclusion in the spatial data set (*AAPA, fig. 14: 132; para 0005*).

Claims 17 & 28 have been analyzed and rejected according to claim 3.

Claim 18 & 29 have been analyzed and rejected according to claim 4.

Claims 19 & 30 have been analyzed and rejected according to claim 5.

Claims 20 & 31 have been analyzed and rejected according to claim 6.

Claim 21 has been analyzed and rejected according to claim 7.

Claim 22 has been analyzed and rejected according to claim 8.

Claim 23 has been analyzed and rejected according to claim 9.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE C. MONIKANG whose telephone number is (571)270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George C Monikang/   9/5/2008
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615